# FBM UITM Insights

CAWANGAN KEDAH

UiTM Cawangan Kedah

UNIVERSITI TEKNOLOGI MARA

Faculty of Business and Management

UiTM di hatiku

VOLUME 5

2022

eISSN 2716-599X

e-ISSN 2716-599X

**FBM INSIGHTS**

**Faculty of Business and Management**

**Universiti Teknologi MARA Cawangan Kedah**

**e-ISSN 2716-599X**

The editorial board would like to express their heartfelt appreciation for the contributions made by the authors, co-authors and all who were involved in the publication of this bulletin.

Published by : Faculty of Business and Management,
Universiti Teknologi MARA Cawangan Kedah

Published date : 27 April 2022

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# INDUSTRIAL REVOLUTION (IR) 4.0: IT IS ESSENTIAL IN TODAY'S BUSINESS

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## INTRODUCTION

Industry 4.0 (IR 4.0) has become a new buzzword for industrialists, academicians, engineers, scientists, and many other intellectuals in recent years. It has received a lot of attention worldwide. Cyber-Physical Systems, Big Data, the Internet of Things (IoT), 3D Printing, Autonomous Robots, Cloud Computing, Augmented Reality, and other major technology areas are among the main technological fields that will digitise the entire value chains in numerous industries. The benefits of implementing the IR4.0 technologies are predicted to be massive in terms of efficiency, flexibility, quality, and mass customisation. It is projected to bring improved product range and automation and boost customer satisfaction (Kumar & Kumar, 2020).

The Fourth Industrial Revolution is divided into nine primary pillars; each considered a key component of Industry 4.0. These nine pillars describe how producers apply the latest technologies to improve every aspect of their production processes. Whether in the manufacturing area or not, it is critical to understand these pillars because they are projected to have a widespread impact across all industries and society. The IR 4.0 consists of nine pillars: Big Data and Analytics, The Internet of Things (IoT), Augmented Reality (AR), The Cloud, Autonomous Robots, Additive Manufacturing, Cyber Security, Horizontal and Vertical System Integration, and Simulation.

## INDUSTRIAL REVOLUTION (IR) 4.0

Here are some opportunities delivered by these pillars or enablers of IR 4.0. Augmented Reality allows companies to remote repair instructions basically anywhere in the world via the internet. System integration is widely used in engineering and information technology. It combines different computing systems and software packages into one large system, which is the driving force behind Industry 4.0's optimal functioning. Cloud computing is a computer system resource, particularly for data storage. Next, Big data is a term used to describe large amounts of data that are difficult to manage; Big data analytics is used to discover valuable correlations, patterns, trends, and preferences to help companies make better decisions. IoT is a network that uses sensors, software, and other technologies to communicate with other devices and systems through the internet.

Subsequently, 3D printing allows industries to use and implement additive manufacturing in collaboration with other technologies, leading to the development of the industry towards intelligent production. The next pillar, Cybersecurity, contains technologies and processes designed to safeguard systems, networks and data from cyber-attacks. Autonomous Robots are intelligent

machines capable of performing tasks independently, without explicit human control. This enabler can interact to improve productivity and product quality. These machines can perform more complex tasks and handle unexpected problems. Finally, simulation involves processes in product design, production planning, material flow processes or modelling of unexpected stochastic events. Additionally, it offers real-time data to observe the physical world in a virtual environment, including machines, tools, products and humans.

IR 4.0 is a digital technology transformation occurring in the manufacturing and production sectors. It consists of nine pillars that include Autonomous Robots, Big Data and Analytics. More and more manual and tedious processes across various industries have been and will be automated using smart machines or digital technologies. For instance, most semiconductor and manufacturing sectors are embedding new digital technology more than ever to stay competitive. Here are some other real-world examples of how IR 4.0 has enhanced business performance (VIAR, 2018). First, a construction company in New York has created SAM (Semi-Automated Mason), a robot for building walls. This revolution helps to enhance its productivity and lower its labour costs. Another example is the car manufacturing company, Audi where it aligns its production with smart technology. Its smart technology riding on big data analytics enables it to produce a highly flexible and efficient manufacturing system. The next example is BJC HealthCare, where the company uses RFID (radio frequency identification) technology in obtaining information and tracking their supplies. It has been proven that the company managed to significantly cut the inventory stocked on-site.

In the Malaysian context, the equipment manufacturing company Bosch is embedding the IR 4.0 technologies in the production lines that enable it to become more flexible and efficient in controlling the production processes (Bosch, 2021). However, in other companies, such as among the SMEs, the adoption of IR 4.0 technologies is still in development. This step would eventually enable them to ensure efficient data analysis to make real-time and better decisions (The Edge Malaysia, 2021).

## CONCLUSION

In conclusion, with IR 4.0 digital transformation occurring in the manufacturing and production sectors, all companies, whether they like it or not, should adopt it for all their businesses. By adopting IR 4.0, companies can gain a competitive advantage as well as improve their business performance. Staying stagnant may lead to the deterioration of the company's bottom-line and eventually its closure. As mentioned earlier, there are nine pillars of IR 4.0. Each plays an important role in the business. Most consumers would be looking for products having features of or produced with technology supported by these nine pillars. Companies that are unable to ride on all nine pillars must adopt as many as they can to be at par or above other companies and their competitors.

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